Docket No. AUS920030435US1

DYNAMIC ACCESS DECISION INFORMATION MODULE

BACKGROUND OF THE INVENTION

5 **1. Technical Field:**

The present invention relates to data processing system and, in particular, to a method, apparatus, and program for providing access decision information.

10 **2. Description of Related Art:**

The Internet is a network of networks, made up of computers in many countries covering commercial, academic and government endeavors. Originally developed for the U.S. military, the Internet became widely used for

15 academic and commercial research. Users had access to unpublished data and journals on a large variety of subjects. However, today the Internet has become commercialized into a worldwide information superhighway, providing information on every subject known to

20 humankind.

A client/server architecture is an architecture in which the user's computer, the client, is the requesting machine and the server is the supplying machine. The client and server are both connected via a local area

25 network (LAN) or a wide area network (WAN), such as the Internet. In client/server environment, the client processes the user interface and can perform some or all of the application processing. Servers range in capacity from high-end personal computers to mainframes.

Docket No. AUS920030435US1

An example of a client/server environment is the
World Wide Web (WWW), which is an Internet service that
links documents locally and remotely. Documents are
stored on the Internet in "Web servers" that store and

5 disseminate Web pages in hypertext markup language (HTML)
to Web browsers at the clients. The Web page, or Web
document, contains text, graphics, animations and videos
as well as hypertext links. Hypertext links in a Web
page let users jump from page to page, whether the pages

10 are stored on the same server or on servers around the
world. The Web has also turned into an online shopping
mall as almost every organization has added electronic
commerce (e-commerce) capabilities.

In many cases, a computer, such as a Web server with

15 e-commerce capabilities, must make informed user specific
decisions based on entitlement data. For example, a Web
site may perform age verification using driver's license
information before selling an R-rated movie. This
entitlement data may be stored in distributed

20 heterogeneous information systems.

Currently, the only way for this entitlement data to
be leveraged is through proprietary and/or disparate
programming interfaces. A disadvantage of this approach
is that in order for each application in the system to

25 have access to the required attributes, each application
must perform its own discovery of the entitlement data.
This is especially inefficient for the case where
multiple operations may be performed by different
applications on the same piece of data. Furthermore,

30 this requires a large amount of custom development on the

Docket No. AUS920030435US1

part of the application developer, because each
application must include an interface for each
entitlement information provider.

Therefore, it would be advantageous to provide a
5 single solution for retrieving and handling user specific
attribute information from various providers.

Docket No. AUS920030435US1

SUMMARY OF THE INVENTION

The present invention provides a dynamic information
retrieval service that can be configured to retrieve
5   entitlement information from a plurality of providers.
Any application that requires entitlement data may make a
request for that information to the dynamic information
retrieval service using a single standard interface. A
request includes information describing the identity of
10   the user and a list of names representing the entitlement
data that are required. The dynamic information
retrieval service determines the appropriate provider for
the entitlement information, retrieves the entitlement
data, and returns the requested entitlement data to the
15   application. The dynamic information retrieval service
may also cache the entitlement data. The dynamic
information retrieval service may process requests
requiring several distinct items of entitlement data to
be retrieved in parallel. Therefore, applications may
20   send a single request for entitlement data for a single
user, but for several providers.

Docket No. AUS920030435US1

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The
5   invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:
10   **Figure 1** depicts a pictorial representation of a network of data processing systems in which the present invention may be implemented;

Figure 2 is a block diagram of a data processing system that may be implemented as a server in accordance
15   with a preferred embodiment of the present invention;

Figure 3 is a block diagram illustrating a data processing system in which the present invention may be implemented;

Figure 4 is a block diagram illustrating a dynamic
20   information retrieval service in accordance with a preferred embodiment of the present invention;

Figures 5A and **5B** are block diagrams illustrating Web sites utilizing a dynamic information retrieval service in accordance with a preferred embodiment of the
25   present invention;

Figure 6 is a data flow diagram for a dynamic information retrieval service in accordance with a preferred embodiment of the present invention;

Figure 7 illustrates an example container data structure in accordance with a preferred embodiment of the present invention; and

Figures 8A and **8B** are flowcharts illustrating the operation of a dynamic information retrieval service in accordance with a preferred embodiment of the present invention.

Docket No. AUS920030435US1

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures, **Figure 1** depicts a
pictorial representation of a network of data processing
5   systems in which the present invention may be implemented.
Network data processing system **100** is a network of
computers in which the present invention may be
implemented. Network data processing system **100** contains
a network **102,** which is the medium used to provide
10   communications links between various devices and computers
connected together within network data processing system
100. Network **102** may include connections, such as wire,
wireless communication links, or fiber optic cables.

In the depicted example, servers **104, 112, 114, 132,**
15   **134** are connected to network **102** along with storage unit
106. In addition, clients **122, 124, 126** are connected to
network **102.** These clients **122, 124, 126** may be, for
example, personal computers or network computers. In the
depicted example, servers **112, 114** may be Web servers that
20   provide data to clients **122, 124, 126.** Clients **122, 124,**
126 are clients to servers **112, 114.** Network data
processing system **100** may include additional servers,
clients, and other devices not shown.

Web servers **112, 114** may make access decisions based
25   on entitlement data. As used herein, entitlement data or
information refers to any attribute for an entity, such as
a user, that may be used to make access decisions.
Entitlement data is also referred to as access decision
information. For example, Web server **112** may allow a
30   purchase based on available credit and Web server **114** may

validate an on-line test taker based on a social security
number and drivers license information. Thus, Web servers
112, 114 may retrieve information from information servers
132, 134. Available credit, social security number, and
5   driver's license information are examples of entitlement
data.

Most likely, information servers **132, 134** have
proprietary and/or disparate programming interfaces. In
order for each Web server to have access to the required
10   entitlement data, Web server must perform its own
discovery of the entitlement data. This is especially
inefficient for the case where multiple operations may be
performed by different applications on the same piece of
data. Furthermore, this requires a large amount of
15   custom development on the part of the application
developer, because each application must include an
interface for each entitlement information provider.

In accordance with a preferred embodiment of the
present invention, a dynamic information retrieval
20   service is configured to retrieve entitlement information
from a plurality of providers, such as information
servers **132, 134.** The dynamic information retrieval
service may be embodied as software within web servers
112, 114. In an alternative embodiment, the dynamic
25   information retrieval service is employed within dynamic
information retrieval server **104.** Web servers **112, 114**
may then request entitlement data through network **102.**

Any application that requires entitlement data may
make a request for that information to the dynamic
30   information retrieval service using a single standard

interface. A request may include information describing the identity of the user and a list of names representing the entitlement data that are required. The dynamic information retrieval service determines the appropriate

5 provider for the entitlement information, retrieves the entitlement data, and returns the requested entitlement data to the application. The dynamic information retrieval service may also cache the entitlement data. The dynamic information retrieval service may process

10 requests requiring several distinct items of entitlement data to be retrieved in parallel. Therefore, applications may send a single request for entitlement data for a single user, but for several providers.

In the depicted example, network data processing

15 system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the Transmission Control Protocol/Internet Protocol (TCP/IP) suite of protocols to communicate with one another. At the heart of the Internet is a backbone of high-speed data

20 communication lines between major nodes or host computers, consisting of thousands of commercial, government, educational and other computer systems that route data and messages. Of course, network data processing system **100** also may be implemented as a number of different types of

25 networks, such as for example, an intranet, a local area network (LAN), or a wide area network (WAN). **Figure 1** is intended as an example, and not as an architectural limitation for the present invention.

Referring to **Figure 2**, a block diagram of a data

30 processing system that may be implemented as a server,

Docket No. AUS920030435US1

such as server **104** in **Figure 1,** is depicted in accordance
with a preferred embodiment of the present invention.
Data processing system **200** may be a symmetric
multiprocessor (SMP) system including a plurality of

5   processors **202** and **204** connected to system bus **206.**
Alternatively, a single processor system may be employed.
Also connected to system bus **206** is memory
controller/cache **208,** which provides an interface to local
memory **209.** I/O bus bridge **210** is connected to system bus

10   **206** and provides an interface to I/O bus **212.** Memory
controller/cache **208** and I/O bus bridge **210** may be
integrated as depicted.

        Peripheral component interconnect (PCI) bus bridge
214 connected to I/O bus **212** provides an interface to PCI

15   local bus **216.** A number of modems may be connected to PCI
local bus **216.** Typical PCI bus implementations will
support four PCI expansion slots or add-in connectors.
Communications links to clients **108-112** in **Figure 1** may be
provided through modem **218** and network adapter **220**

20   connected to PCI local bus **216** through add-in boards.

        Additional PCI bus bridges **222** and **224** provide
interfaces for additional PCI local buses **226** and **228,**
from which additional modems or network adapters may be
supported. In this manner, data processing system **200**

25   allows connections to multiple network computers. A
memory-mapped graphics adapter **230** and hard disk **232** may
also be connected to I/O bus **212** as depicted, either
directly or indirectly.

        Those of ordinary skill in the art will appreciate

30   that the hardware depicted in **Figure 2** may vary. For

Docket No. AUS920030435US1

example, other peripheral devices, such as optical disk
drives and the like, also may be used in addition to or in
place of the hardware depicted. The depicted example is
not meant to imply architectural limitations with respect
5   to the present invention.

The data processing system depicted in **Figure 2** may
be, for example, an IBM eServer pSeries system, a product
of International Business Machines Corporation in Armonk,
New York, running the Advanced Interactive Executive
10   (AIX) operating system or LINUX operating system.

With reference now to **Figure 3,** a block diagram
illustrating a data processing system is depicted in which
the present invention may be implemented. Data processing
system **300** is an example of a client computer. Data
15   processing system **300** employs a peripheral component
interconnect (PCI) local bus architecture. Although the
depicted example employs a PCI bus, other bus
architectures such as Accelerated Graphics Port (AGP) and
Industry Standard Architecture (ISA) may be used.
20   Processor **302** and main memory **304** are connected to PCI
local bus **306** through PCI bridge **308**. PCI bridge **308** also
may include an integrated memory controller and cache
memory for processor **302.** Additional connections to PCI
local bus **306** may be made through direct component
25   interconnection or through add-in boards.

In the depicted example, local area network (LAN)
adapter **310,** SCSI host bus adapter **312,** and expansion bus
interface **314** are connected to PCI local bus **306** by direct
component connection. In contrast, audio adapter **316,**
30   graphics adapter **318,** and audio/video adapter **319** are

connected to PCI local bus **306** by add-in boards inserted into expansion slots. Expansion bus interface **314** provides a connection for a keyboard and mouse adapter **320,** modem **322,** and additional memory **324.** Small computer

5   system interface (SCSI) host bus adapter **312** provides a connection for hard disk drive **326,** tape drive **328,** and CD-ROM drive **330.** Typical PCI local bus implementations will support three or four PCI expansion slots or add-in connectors.

10   An operating system runs on processor **302** and is used to coordinate and provide control of various components within data processing system **300** in **Figure 3**. The operating system may be a commercially available operating system, such as Windows XP, which is available from

15   Microsoft Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provide calls to the operating system from Java programs or applications executing on data processing system **300**. "Java" is a trademark of Sun

20   Microsystems, Inc. Instructions for the operating system, the object-oriented operating system, and applications or programs are located on storage devices, such as hard disk drive **326,** and may be loaded into main memory **304** for execution by processor **302**.

25   Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash read-only memory (ROM), equivalent nonvolatile memory, or optical disk drives and the like,

30   may be used in addition to or in place of the hardware

depicted in **Figure 3.** Also, the processes of the present invention may be applied to a multiprocessor data processing system.

5   As another example, data processing system **300** may be a stand-alone system configured to be bootable without relying on some type of network communication interfaces. As a further example, data processing system **300** may be a personal digital assistant (PDA) device, which is configured with ROM and/or flash ROM in order to provide

10   non-volatile memory for storing operating system files and/or user-generated data.

         The depicted example in **Figure 3** and above-described examples are not meant to imply architectural limitations. For example, data processing system **300**

15   also may be a notebook computer or hand held computer in addition to taking the form of a PDA. Data processing system **300** also may be a kiosk or a Web appliance.

         With reference now to **Figures 4A** and **4B,** block diagrams are shown illustrating a dynamic information

20   retrieval service in accordance with a preferred embodiment of the present invention. More particularly, **Figure 4A** illustrates an application that makes decisions based on user specific entitlement data. As many examples of entitlement data, application **410** may be a

25   software program used by a loan officer or automobile insurance agent. A mortgage loan officer may make decisions, using software tools, based on an applicant's credit worthiness, bank account balance, net worth, etc. Similarly, an automobile insurer may make decisions,

30   using a software tool, based on an applicant's recorded

Docket No. AUS920030435US1

traffic violations, previous claims, credit worthiness, etc. Therefore, application **410** may access many disparate information providers.

In accordance with a preferred embodiment of the
5   present invention, the application sends requests to dynamic information retrieval service **432**. This dynamic information retrieval service may be implemented as software in the same computer as application **410**. In an alternative embodiment, dynamic information retrieval
10 service **432** is implemented as a separate machine connected through a LAN or WAN, such as the Internet.

When dynamic information retrieval service **432** receives a request from application **410,** a client **434** is generated for each information provider **440** for which
15 entitlement data is to be retrieved. Each client **434** then retrieves the entitlement data using a provider-specific protocol and returns this information to dynamic information retrieval service **432**. Once all the entitlement data for a request is retrieved, the dynamic
20 information retrieval service compiles the retrieved containers into a standardized response to be returned to the requesting application.

The dynamic information retrieval service may store containers in storage **436**. This storage may act as a
25 cache for entitlement data with configurable cache policies. Thus, dynamic information retrieval service **432** may retrieve pieces of entitlement data from storage **436,** rather than generating a client **434**. Data retrieved from storage **436** will be in the form of containers and
30 may be compiled into a standardized response as if the

containers were retrieved from one or more of information
providers **440**.

      With reference now to **Figure 4B,** application **460** is
an application that communicates with an access manager
5   that makes informed user specific decisions for the
application. Thus, application **460** communicates with
access manager **470** and rules engine **472** for making these
decisions. Access manager **470** manages access control and
decides authorization queries for the application. Rules
10   engine **472** is called by the access manager to evaluate
Boolean rules based on credentials, entitlements, or
application context data.

      In accordance with a preferred embodiment of the
present invention, the application sends requests to
15   dynamic information retrieval service **482**. This dynamic
information retrieval service may be implemented as
software in the same computer as application **460**. In an
alternative embodiment, dynamic information retrieval
service **482** is implemented in a separate machine
20   connected through a LAN or WAN, such as the Internet.

      When dynamic information retrieval service **482**
receives a request from access manager **470,** a client **484**
is generated for each information provider **490** for which
entitlement data is to be retrieved. Each client **484**
25   then retrieves the entitlement data using a provider-
specific protocol and returns this information to dynamic
information retrieval service **482**. Once all the
entitlement data for a request is retrieved, the dynamic
information retrieval service compiles the retrieved

containers into a standardized response to be returned to the requesting application.

The dynamic information retrieval service may store containers in storage **486.** This storage may act as a

5 cache for entitlement data with configurable cache policies. Thus, dynamic information retrieval service **482** may retrieve pieces of entitlement data from storage **486,** rather than generating a client **484.** Data retrieved from storage **486** will be in the form of containers and

10 may be compiled into a standardized response as if the containers were retrieved from one or more of information providers **490.**

With reference now to **Figures 5A** and **5B,** block diagrams illustrating Web sites utilizing a dynamic

15 information retrieval service are shown in accordance with a preferred embodiment of the present invention. More particularly, with respect to **Figure 5A,** a dynamic information retrieval service implemented as a software plug-in within Web site **510.**

20 Web site **510** includes Web server **512,** which receives hypertext transfer protocol (HTTP) requests from client **502.** These requests may be for information and services provided by backend servers **514.** Web site **510** may also provide services for client **502** for which access

25 decisions are made. Thus, Web site **510** includes access manager **520** and rules engine **522** for making these decisions. Access manager **520** manages access control and decides authorization queries for the application. Rules engine **522** is called by the access manager to evaluate

Boolean rules based on credentials, entitlements, or application context data.

The access manager may make decisions based on user specific entitlement data. For example, Web site **510** may
5   be an e-commerce Web site that may extend credit based on an applicant's credit worthiness. In another example, Web site **510** may be an automobile insurance Web site that may make access decisions based on an applicant's recorded traffic violations, previous claims, credit
10   worthiness, etc. Therefore, access manager **520** may access many disparate information providers.

In accordance with a preferred embodiment of the present invention, the access manager sends requests to dynamic information retrieval service plug-in **532**. In
15   the depicted example, this dynamic information retrieval service is implemented as a software plug-in within Web site **510.**

When dynamic information retrieval service **532** receives a request from access manager **520**, a client **534**
20   is generated for each information provider **540** for which entitlement data is to be retrieved. Each client **534** then retrieves the entitlement data using a provider-specific protocol and returns this information to dynamic information retrieval service **532**. Once all of the
25   entitlement data containers for a request are retrieved, the dynamic information retrieval service compiles these containers into a standardized response to be returned to the requesting access manager.

The dynamic information retrieval service may store
30   containers in storage **536.** This storage may act as a

cache for these containers with configurable cache policies. Thus, dynamic information retrieval service **532** may retrieve containers from storage **536,** rather than generating a client **534.** Containers retrieved from

5 storage **536** may be compiled into a standardized response as if the containers were retrieved from one or more of information providers **540.**

In the embodiment illustrated in **Figure 5B,** the dynamic information retrieval service is implemented as a

10 separate machine. Web site **560** includes Web server **562,** which receives hypertext transfer protocol (HTTP) requests from client **552.** These requests may be for information and services provided by backend servers **564.** Web site **560** may also provide services for client **552** for

15 which access decisions are made. Thus, Web site **560** includes access manager **570** and rules engine **572** for making these decisions. Access manager **570** manages access control and decides authorization queries for the application. Rules engine **572** is called by the access

20 manager to evaluate Boolean rules based on credentials, entitlements, or application context data.

In accordance with a preferred embodiment of the present invention, the access manager sends requests to dynamic information retrieval service **580,** which may be

25 implemented in a separate machine, such as server **104** in **Figure 1,** connected through a LAN or WAN, such as the Internet. As an example, the access manager may send an access decision information request as a simple object access protocol (SOAP) request.

Docket No. AUS920030435US1

The dynamic information retrieval service includes dynamic information retrieval server **582,** which receives requests from access manager **570.** The dynamic information retrieval service generates a client **584** for

5　each information provider **590** for which entitlement data is to be retrieved. Each client **584** then retrieves the entitlement data in the form of containers using a provider-specific protocol and returns this information to dynamic information retrieval service **582.** The

10　dynamic information retrieval service compiles the containers into a standardized response to be returned to the requesting access manager.

The dynamic information retrieval service may store containers in storage **586.** This storage may act as a

15　cache for entitlement data containers with configurable cache policies.

Requests to the dynamic information retrieval service must take a certain form. Preferably, a request includes information describing the identity of the user

20　and a list of names representing the entitlement data that are required, wherein the user is the user to which entitlement information pertains. The dynamic information retrieval service determines the appropriate provider for the entitlement information based on the

25　entitlement data names in the request.

Furthermore, the containers in which the requested entitlement information is returned will take a specific form. Thus, dynamic information retrieval service **580** may also include container descriptors **588.** These

30　descriptors may be used by Web site developers to code

access manager **570** and rules engine **572**. Developers may use this information to learn how data is to be extracted from the standardized response. For example, if a request for a user's available balance with a credit card

5 company is sent, the access manager and rules engine must extract this piece of data from the credit card company's container, which may contain more information than simply the available balance.

The container descriptors may contain the following:

10 - A unique identification (ID) that uniquely identifies the container.

- The extensible markup language (XML) name of the container. This will later be used as the XML element name that will contain all of the

15 container's data. A container named "customerData" will later produce an element "<customerData>."

- A cost for retrieving the container.

- A list of attribute definitions. Each attribute definition contains an attribute name and an XML

20 simple type.

- References to the unique ID of sub containers. In a preferred embodiment, if a container is retrieved, its sub containers are automatically retrieved as well.

25 - Property elements. These can be used to store implementation specific information, such as the providers that are able to provide this kind of container. Providers may be specified by name and protocol.

With reference now to **Figure 6,** a data flow diagram for a dynamic information retrieval service is shown in accordance with a preferred embodiment of the present invention. Access manager **602** sends an access decision

5   information request to dynamic information retrieval server **612** (action **1**). In a preferred embodiment, the request identifies a user and a list of names representing the entitlement data that are required. The dynamic information retrieval server starts a session **614**

10 for the user (action **2**).

In the depicted example, the dynamic information retrieval server determines that the entitlement data can be retrieved from two access decision information providers **632, 634.** The session generates clients **622,**

15 **624** for the information providers (action **3**) and each client retrieves entitlement data, in the form of containers, from one of information providers **632, 634** using a provider-specific protocol (action **4**).

Thereafter, each client returns the entitlement

20 information containers to the session (action **5**) and the session shuts down the clients. The session then returns the entitlement data containers to dynamic information retrieval server **612** (action **6**). Then, the dynamic information retrieval server shuts down the session,

25 builds a response, and returns standardized response **640** to the requesting access manager **602** (action **7**).

Figure 7 illustrates an example container data structure in accordance with a preferred embodiment of the present invention. In the depicted example, the

30 container data structure is an extensible markup language

(XML) document with recursively defined sub containers. This example is a tagged document with a hierarchical structure.

With reference to **Figures 8A** and **8B,** flowcharts
5   illustrating the operation of a dynamic information retrieval service are shown in accordance with a preferred embodiment of the present invention. More particularly, with respect to **Figure 8A,** the process begins by receiving a request for access decision
10   information from an access manager. The process retrieves any cached entitlement information from storage (step **802**).

Next, a determination is made as to whether any uncached entitlement information is requested (step **804**).
15   If uncached entitlement information is requested, the process starts a session (step **806**) and determines from which information providers the entitlement information is to be retrieved (step **808**). The process retrieves entitlement information from the information providers
20   (step **810**). The operation of retrieving entitlement information from the information providers will be described with more detail below with respect to **Figure 8B.**

Thereafter, the session caches the entitlement
25   information (step **812**) and the process shuts down the session (step **814**). Then, the process builds a response (step **816**), returns the response to the requesting access manager (step **818**), and ends. Returning to step **804**, if all of the requested entitlement information was cached,
30   the process continues directly to step **816** to build a

Docket No. AUS920030435US1

response. Thereafter, the process returns the response to the access manager (step **818**) and ends.

Turning now to **Figure 8B,** a flowchart illustrating the operation of retrieving access decision information
5   from an information provider is shown. The process begins and the session generates a client for the information provider (step **852**). The client then generates a protocol module (step **854**). The protocol module retrieves access decision information and returns
10   the information to the client (step **856**). Then, the client shuts down the protocol module and relays the information to the session (step **858**). Thereafter, the session shuts down the client (step **860**) and the process ends.

15   Thus, the present invention solves the disadvantages of the prior art by providing a dynamic information retrieval service that can be configured to retrieve entitlement information from a plurality of providers. Any application that requires entitlement data may make a
20   request for that information to the dynamic information retrieval service using a single standard interface. The dynamic information retrieval service determines the appropriate provider for the entitlement information, retrieves the entitlement data, and returns the requested
25   entitlement data to the application. The dynamic information retrieval service may also cache the entitlement data. The dynamic information retrieval service may process requests requiring several distinct items of entitlement data to be retrieved in parallel.
30   Therefore, applications may send a single request for

entitlement data for a single user, but for several providers.

It is important to note that while the present invention has been described in the context of a fully
5 functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions and a variety of forms and that the present invention
10 applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and
15 transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The computer readable media may take the form of coded
20 formats that are decoded for actual use in a particular data processing system.

The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the
25 invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of
30 ordinary skill in the art to understand the invention for

Docket No. AUS920030435US1

various embodiments with various modifications as are
suited to the particular use contemplated.